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☞See advertisement on last page.

Poetry.

THE COTTAGE EMIGRANT'S FAREWELL.

BY AGNES STRICKLAND.

In a lone mossy dingle,
By green trees o'erhung,
Their wild song of sorrow
Three Highland maids sung—
Who were doomed, with their people
In exile to roam
O'er the stormy Atlantic
To seek for a home.

For the hearths of their fathers,
By Want's chilling hand
Had been sternly extinguished
That morn in the land:
And they came, for the last time,
All weeping, to bring,
The cool gushing waters
From that pleasant spring.

It was piteous to see
How their sweet eyes grew dim,
With their fast flowing tears,
As they hung o'er its brim.
And looked their farewell
To that beautiful spot,
Endeared by those ties
Which could ne'er be forgot.

And oft from their vessels,
Replenished in vain.
They restored the pure stream
To the fountain again;
As fondly they lingered,
And loth, to depart,
They sobbed forth their grief
In the anguish of heart.

"Dear fountain of our native glen!
Far hence we're doomed to go;
And soon for other urns than ours
Thy crystal streams will flow.

"Thy snowy lillies still will bloom
On this delightful spot.
Sweet fountain of our native glen!
Though we behold them not.

"And thou wilt from thy sparkling cell,
Still softly murmur on.
When those who lov'd thy voice to hear,
To other lands are gone.

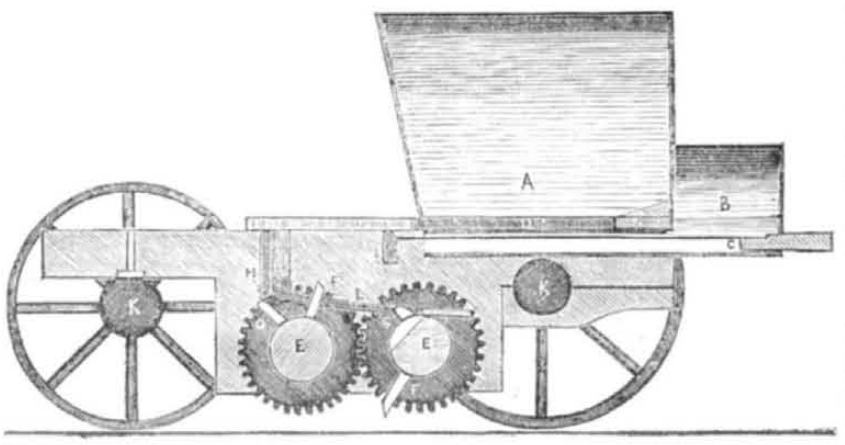
"Dear fountain of our native glen?
Beloved by us in vain,
That pleasant sound shall never glad.
Our pensive ears again.

"Dear fountain of our native glen?
Which we no more must view,
With breaking hearts thy children pour
Their long—their last adieu."

I See a Man.

I do not see his shabby dress,
I see him in his manliness;
I see his axe; I see his spade;
I see a man that God has made;
If such a man before you stand,
Give him your heart—give him your hand;
And praise your Maker for such men;
They make this old earth young again.

PRATT'S
IMPROVED GRAIN AND SEED PLANTER.



This engraving is a longitudinal section view of a machine invented by Mr. Reuben Pratt, of Riverhead, Long Island, N. Y. It is intended for manuring land and planting seed at one operation. There are two cog wheels connected with the two displayed in the engraving which are not seen, but their absence is not of much importance as the principle is exhibited. There is one thing that will readily strike the mind, viz. that if a wagon could be projected that would make the proper deposit for the seed, and by a mechanical arrangement deposit the manure first and the seed on the top of it, and then cover all up regularly and quickly, that a very important object would be gained. This machine is intended to accomplish this purpose and on light soils and level lands Mr. Pratt, who intends to apply for a patent, will warrant a perfect operation.

DESCRIPTION.—A, is the box for holding the poudrette or whatever fine fertilizer it may be. B, is the grain box. The order of these two boxes, however, may be inverted. It is just as easy to place A below B to answer the same purpose, if required. C, is a slide board to drive out and deposit the grain, and D, the same for the upper box. H L, is a crank or eccentric connection for opening and closing the openings of the boxes A and B. This crank is as broad nearly as the bottom of the wagon and is operated by cams G G, on the cog wheels E E These cams as the wheels revolve catch hold of the crank at proper places and by slipping and catching it will be observed from their shape that a traverse motion will be given to feeders D and C, opening and closing the orifices of these boxes at the time required—the upper one opening a second before the lower, and then both are closed again. F F, are two scoops, the one on the front axle to make the opening for the hill, and the one on the second to cover it up. These scoops as well as the cams are fixed on the axles E E, and the cog wheels work into one another, so that the scoops can be placed at the exact distance on the axles to insure correct operation, and the cams also to work the crank. This any person will understand and see can be done. K K, are the axles of the wagon wheels.

OPERATION.—Suppose the wagon to be moving. The scoop F, has already made the bed for depositing the seed and is going round again. G, has already operated on the notch of the crank and the manure and seed box have been opened by that operation, for I, a catch, connects them both together. F, the scoop, now upon the second axle, as it is moving in a contrary direction from the motion of the first wheel, is about covering up the seed, while G, on the same axle, is closing the openings of the boxes and thus a continual revolution of manure and planting is kept up as the wagon moves along. It can be made to plant in drills or hills as the case may be, and with a boy to guide the wagon and paying a little attention to the manure box not a few number of acres can be planted in a day. The operation of the feed boards C D, like those of slide valves, will always insure correct operation. They must work or the wagon must stop, or something give way, and on this, the feeding part, the whole success of power planting depends—there must be no chance work about the depositing of the seed and manure, and Mr. Pratt intends that there shall be none.

Receipt for making New York Milk.

"Take two pounds of lime; two and a quarter pounds of chalk, one and three quarter pounds starch, 20 quarts of rain water, and to every quart of the solution add two tablespoonsful of the droopings from a cow, so as to give it the right color. Shake it about ten minutes, then settle it with a soft brickbat; then strain it through a pair of window shutters—and you will have the pure Orange county milk."

Geological Researches.

Dr. Lillewalch of Stockholm, having caused searches to be made in the marshes of Scania, has discovered the skeletons of men and animals in a remarkable state of preservation. Near them he also found arms, instruments for sport and fishing, and utensils of different descriptions, all of which are in stone, showing that the use of metals was unknown when they were made. They belong to those primitive people of whom traces remain in the traditions of the North, but whose race is now extinct.

Those who discover evidences of the Celts of Ireland or Wales, having discovered America before Columbus, be it remembered have only the claims of the same arms as found in Sweden, being found in Florida.

Origin of Stays.

Stays were first invented by a brutal butcher of the thirteenth century, as a punishment for his wife. She was very loquacious, and finding nothing would cure her, he put a pair of stays on her, in order to take away her breath, and so prevent her, as he thought, from talking. This cruel punishment was inflicted by other husbands, till at last there was scarcely a wife in all London who was not condemned to wear stays. The punishment became so universal at last, that the ladies in their defence made a fashion of it, and so it has continued to the present day.

RAIL ROAD NEWS.

Providence Railroad.

On the Providence Railroad the cars commenced their regular trips between Pawtucket and Boston on the 16th inst., making use of the new branch road to the former place The cars will leave Pawtucket at 8, A. M., and Boston at 3.30, P. M. This new arrangement, says a correspondent, has been brought about mainly by the exertions of W. Raymond Lee, Esq., the efficient superintendant of the Boston and Providence Railroad.

Great Western Railroad.

A vigorous effort is about to be made by our friends in Canada to gather up the amount of stock yet required for the completion of this road which is to unite Michigan with Lower New York, by a few hours ride. Eight hundred and seventy-five thousand pounds, are yet wanting to complete the sum requisite to build the road.

Ohio and Baltimore Railroad.

It appears from an article in the Baltimore Patriot that it is at least a settled point that the railroad is to strike the Ohio river at Wheeling. The Patriot says in the article in question:

The directors of the Baltimore and Ohio Railroad, with great unanimity, advised the acceptance of the law for making the road to Wheeling, and the stockholders, in general meeting, by a great majority of votes, decided to accept it, and did accept it.

The Maryland Legislature, by the action to which we have referred above, have approved of this decision of the board and stockholders and, by retaining in office, the directors on the part of the State, have confirmed their particular course in this matter.

Mississippi and Ohio Railroad.

The great Railroad which is to link St. Louis and Cincinnati together is a grand project. We understand that the route through the State of Indiana, by Vincennes, is preferred to the central route through Indianapolis, because it is 75 miles shorter. The Indianians are determined to prosecute the work with the same vigor that they have pushed the bill through the Assembly.

Iowa Railroad.

Measures are being taken to connect Dubuque, Cedar Rapids, Iowa city and Keokuck by railroad, and also for a line from Davenport to Council Bluffs, Mo Johnson County, Iowa through which these lines pass, will ship this year 800,000 pounds of pork and 75,000 bushels of wheat.

Railroad Signals of Danger.

Detonating balls as well as red lights are used in cases when trains are detained on the English Railways. Under the wheels of any approaching engine the balls explode with an exceeding loud report.

Railroad Iron.

A lot of English Rails has been sent back from this City to Liverpool, because no sale could be effected on account of their inferiority to those now made in America. The rails made at the Trenton, N. J., Iron Co., are worth $8 per ton more than English rails. There is no use of exporting a poor article, it is sure to find its level and its character.

Telegraph Improvement.

The transmission of despatches between New York and Washington has been greatly expedited by the insulation of the second or independant wire being completed so perfectly that the fluid can pass from one extremity to the other, and of course obviates the necessity that formerly existed for all messages being re-written by the operators at the Philadelphia office. This is an improvement that will be appreciated by all who have dealings with the lightning lines, as a medium of communication with their correspondents.

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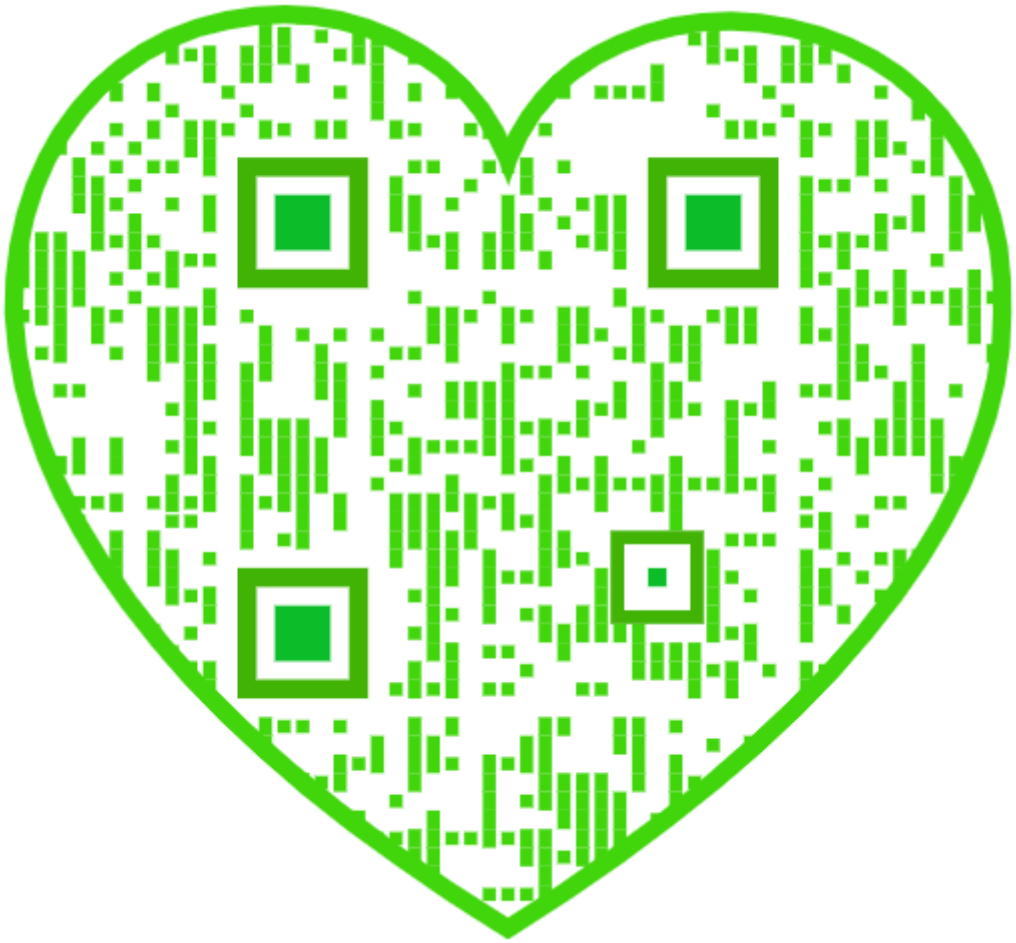

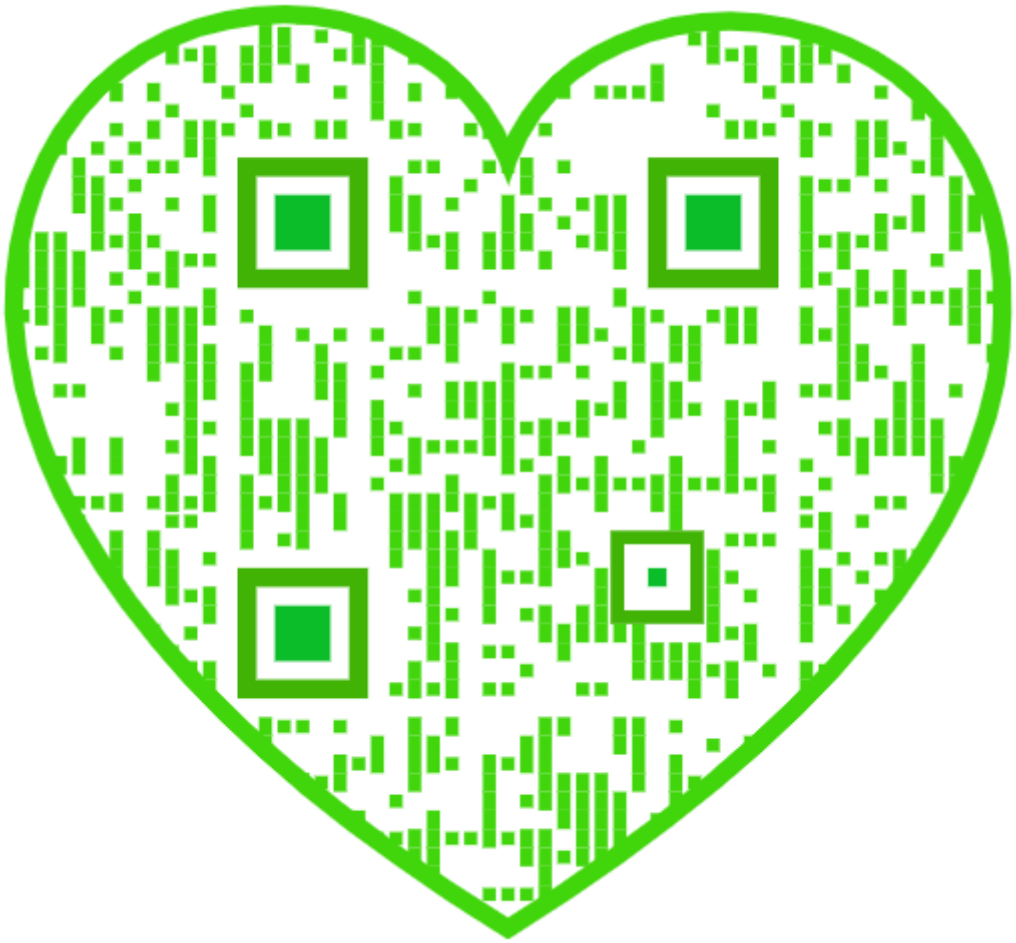

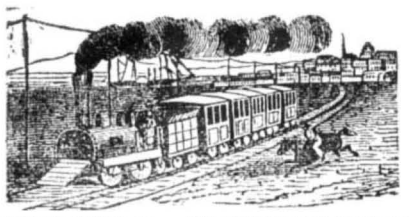

France.

"There is but one step from the sublime to the ridiculous." These words were uttered by Napoleon, when amid the flames of Moscow he was obliged to dictate the retreat of the grand army. By the last steamer from Europe, we learn some very important particulars regarding France. Louis Phillipe was a king one day, and on the next a fugitive, and in a few days he is found on the ocean in an open boat with the partner of his regal honors. struggling against wind and tide to reach a foreign strand. He was picked up and carried to England without a change of clothes and but a solitary five franc piece in his pocket. Sad comment on the stability of thrones in our day.

France has been declared a Republic, and one feature very different from the old Revolution is, that Religion is respected. The people found an image of the Saviour in the Tuilleries and the crowd even in the midst of revolution, bowed before it. We hope that peace and concord may be with France, if she be virtuous she will be happy. There appears to be some disturbance amongst the working classes—this is an element that may yet bring the rich and poor into fierce collision There have been riots in Edinburg and Glasgow, Scotland, and a number have been shot. All Europe is in commotion, and there is one feature pervading the entire population of these countries, and one that many are overlooking, viz. that all this strife is but a presage of coming events and those events are "the rights of labor." It is the toiling millions of Europe who are arousing to demand—not to beg—of man to enjoy the fruit of their toil.

Jethro Wood's Patent Plough.

Mr. Farrelly of Pennsylvania, from the Committee on Patents in the House of Representatives, reported against extending Wood's patent, so on motion the bill was laid on the table. To the credit of the House of Representatives be it spoken, the merits of the application of Wood's heirs was far more correctly examined by them than by the Senate The patent had been in force twenty-one years. Our words have not been ineffectual in warning and rebuking. Mr. Farrelly deserves much credit for his interest in the true and legitimate rights of inventors, and the rights also of the community. He is the gentleman who so forcibly advocated a good salary to competent Patent Office Examiners.—The Bill, from the motion to lay on the table, may be said to be defeated. We always thought that the Bill in itself, at any rate, was unconstitutional, at least some of its provisions, and could not be enforced in the States.

Explosion.

The boiler of the foundry, of Curtis and Randall, East Boston, exploded on the 23d ult and instantly killed the engineer, and dangerously wounded five or six others—one of whom has since died. It blew the roof from off the building, and blew down the side wall The cause of the explosion was supposed to be the exhaustion of the water in the boiler while the workmen were gone to dinner. When they came back the Engineer started the force pumps to fill the boiler, when an immediate and dreadful explosion followed.

The fire should have been immediately taken from the boiler instead of letting in cold water.

Barry's Tricopherous.

There is no preparation which we have ever tried for the hair that gives us such perfect satisfaction as has the use of Barry's Tricopherous. It is effectual in removing all dandriff from the head, and keeps the hair in a soft and glossy state, yet entirely free from giving it a greasy or oily appearance. Prepared only by Barry, 137 Broadway. Price 25 cents per bottle.

Curious Effect of Oil.

The effect of oil in smoothing the surface of the troubled waters is well known. Attention was directed to the fact by Dr. Franklin more than half a century ago; but this property of oil was known many centuries since, and has furnished not merely matter of speculation and amusement to philosophers but, has been applied from time immemorial by the natives of various and distant countries, to the most important uses of procuring provisions. The fishermen on the coast of Provence, it is said, ages ago, adopted this plan to enable them to see the muscles and other shell-fish at the bottom of the sea. The same plan was also adopted by the same order of men in the Tagus, near Lisbon and by the inhabitants of the Hebrides, even of the most remote isles, St. Kilda.

There was once a law in force in England that when a ship was in danger during a tempest, and it was necessary to throw overboard goods to lighten the vessel, if oil was on board and could be reached, that must be thrown over first, that it might produce the effect of smoothing the waves, and prevent danger by shipping seas. Even at this day the Ragusians, when they go on fish-spearing excursions, throw oil upon the water with a brush that they may thus obtain a clear prospect of the bottom. The transparent openings thus formed they call windows. Doubtless oil could sometimes be used to advantage in this way by the fishermen in our harbors.

A New Life Preserver.

The Detroit Daily Advertiser relates the following incident which is rather a pozer for your light fellows:—

A remarkable accident occurred a few days since to a worthy citizen of Detroit, Mr. Roger Fitzpatrick, brewer. Mr. F. had been across the river, and on returning in a canoe, with two others. the frail bark was capsized near the middle of the stream. The weather was extremely cold, and the river was filled with masses of floating ice. Mr. F. unable to swim, threw himself upon his back, folded his arms across his breast, and calmly submitted himself to the action of the wind and waves. Being a corpulent man, and wrapped in a large overcoat, he kept on the surface of the water, but in a few moments became unconscious. The wind was blowing fiercely, and Mr. F. floated towards her majesty's dominions. Some persons happened to see the body, and dragged it on the beach, and sent for one of the Queen's Coroners.

The usual methods of restoring drowned persons were resorted to—the jaws pried open and brandy poured down the throat:—Mr. Fitzpatrick opened his eyes and very coolly inquired what they "wanted to do with him." We saw Mr. Fitzpatrick yesterday, quietly pursuing his vocation.

There now, all those lean fellows, who never wish to die by drowning, must laugh and grow fat on beef and beer.

Lots of Fish for the Cockneys.

It is stated that 86,000 bushels of soles have been forwarded during the last year, to the London market, from the Silver Slip, a kind of hollow about three quarters of a mile long, and about sixteen fathoms deeper than the neighboring sea, which was accidentally discovered six years ago on the Yorkshire coast, 14 miles off Flamborough Head, and which is said by the fishermen to have contained a bed of fish five or six feet deep.

Guano.

By accounts from Peru, the Government of that country have fixed the price of guano at £3 per ton, free on board; and it is said, if the last years consumpt be regarded as the average. there is supply for nearly a hundred years.

Gold in Russia.

The produce of the gold mines in Russian Siberia is increasing so much, as to render it certain that the value of this metal must be seriously affected. In 1827 the product was four and a half millious of dollars. In 1846 it was 17 millions and the Russian Government expects a steady increase for years to come.—This we extract from a printed report by the British Parliament.

Parker's House Cisterns.

The Cisterns for domestic purposes invented by Mr. O. Parker of Syracuse are constructed in the following described manner.

The cistern is built of cement without brick or stone, say one-third cement, two thirds of coarse gravel mixed together like common mortar—the hole in the ground being dug large enough to admit a wooden frame, made in pieces of two feet high by three feet long, the pieces being fastened firmly together by hooks and staples; the frame is set off from the sides, say 2½ to 3 inches, according to the nature of the soil, commencing with one row of pieces; the composition (cement and gravel) is then turned in slowly, another set of pieces then broken on, adding composition as before. As the composition hardens, the frames are removed, and it is finished inside with a trowel, like the wall of a house. The top is arched, leaving a hole at top say 24 inches square, to admit a person for the purpose of cleaning it when neccssary. The bottom is flat, and made after the sides and top are finished.

For pipes for carrying the water in, and waste pipe, use a round stick, say 3 to 5 inches in circumference, and from the composition around the stick, withdrawing the stick, as the pipe is formed.

The cover to the hole on top of the Cistern is generally of wood, in which you insert either wooden pipe or lead pipe, though a lead pipe can be easily inserted into any part of the Cistern by boring a hole through the cement after it is thoroughly hardened.

The cisterns that are built with the Heidelberg flag stone in Albany County, however, are the best and cheapest in the world.

Green Wood.

No person should ever burn green wood. It is full of water and much carbon is wanted to dispel the water contained in the wood. There is about one fourth of water in every cord of wood.

To ascertain the caloric lost, we must find the weight of water in a cord of wood. In his careful experiments on the combustion of wood, Count Rumford proved that a cord of dry beech weighs about 2,800 pounds; which must be three-fourths of the weight of the green beach; that is, a cord of green beach must weigh 3,700 pounds, or taking the mean between one third and one fourth, must be more than 4,000 pounds. In burning a cord of green beech, at least one thousand pounds of water must be evaporated, and 1000 pounds of water would fill three barrels of 32 ale gallons, or nearly two hogsheads of sixty-three gallons wine measure. The quantity of caloric lost in this way may be estimated in a rough way by the quantity of wood consumed in evaporating three barrels or two hogsheads of water.

In the combustion of 20 cords of green wood, 60 barrels of water must be evaporated. Now, it takes six times as much heat to evaporate a pound of water, as to heat a pound from 50 degrees of temperature to the boiling point.

The economy in using dry wood is well understood by many. These views give adequate reasons for it. Yet it is to be feared, that many a farmer does not use proper care in drying and housing his wood.

Union Magazine.

The April number is just issued and well sustains the reputation which the former numbers have made for the work. The Union is the best monthly literary publication in the country and we heartily recommend it to the public. Israel E. Post, Publishers, 150 Nassau st.

Holden's Dollar Magazine.

The number for April of this cheap magazine is out and comes to us as usual stored with a great variety of original and interesting matter.—Published at 132 Nassau st.

Two weavers have been convicted at the Court of Common Pleas, Taunton, Mass., for riot. This was for the turn out at Fall River.

The guns captured from the Sikhs are to be placed muzzle to muzzle in a column 150 feet high, at Calcutta; and the top of the pillar is to be surmounted with a figure of Britannia, supported by two seapoys.

Turpentine.

The consumption of this article is increasing vastly—much beyond the general calculation and belief. One principal source of this increase is in the use of the distilled spirits of turpentine, known under the name of Camphene, and is used in place of oil in almost every family. Camphene is not explosive, although its combination with alcohol is, and it is therefore safer to use except where there may be a number of children in a family. In making turpentine a medium sized pine tree, with large top, furnishes the turpentine best. In North Carolina, however, trees of only eight or nine inches diameter are often selected.—The tree is tapped for its sap in the months of December, January and February. The first turpentine which flows is called *virgin* turpentine, and care is taken to preserve the pure white color which is natural to it—rosin made from the virgin turpentine is transparent.—The sap is distilled like malt and the result is turpentine and rosin and tar. More turpentine is now made in North Carolina and Georgia than in all the rest of the world put together, and the distillation is conducted in the forest, saving all unnecessary transportation of refuse material. Twenty years ago, there was more spirits of turpentine distilled in Europe than in the United States, but the tide has now turned and Europe gets turpentine from America.

Honor to the Female Brave.

A Beautiful Silver Tankard with an appropriate inscription has been presented to Miss Sarah E. Rogers, of Richmond, Va., "for her presence of mind, courage, and fortitude, in saving the life of Joseph Robinson, caught in the machinery of the Virginia Woolen Factory, March 14th, 1848.

The powerful solvent capabilities of chloroform are now by experiment fully established. Caoutchouc, resin, copal, and gum-lac, bromine, iodine, the essential oils, &c., yield to its solvent powers. This property may it is believed, prove extensively of advantage in very many of the fine and useful arts.

The "Metalized India Rubber," made for the purpose of being placed under iron rails, where they have a bearing on iron or wood, with a view to diminish in the wear of engines and cars, is to be tried on the Stonington route, four miles of which will be laid with it by the 1st of May.

The wires of House's Telegraph has been struck across the North River two hundred feet above the water. Thus we shall now have two lines from this City to the South-west.

A merchant died recently at Hamburg, worth $4,200,000 who began life without a penny. He could not have been very honest if he was so very rich.

The European Association for propagating the Roman Catholic faith in America have granted to the missions, this year, the large sum of $211,410.

Some Cornish miners have proceeded to Chili, for the purpose of working the copper mines of that country,

No fewer than sixty coasting vessels are now owned by the aboriginal inhabitants of New-Zealand.

A cannon shot without legs travels faster than a caterpillar with lots of that same. It is because the caterpillar goes of its own accord, but the cannonshot is *sent*.

If a good name were purchaseable, how few would avail themselves of the luxury, if they had to pay ready money for it.

Mr. Crawford's beautiful statue of the Dying Indian Girl, will soon be shipped from Rome for New York.

Hugh H. Grant, Esq. of South Carolina, has in his possession a sample of rice grown on his father's plantation in 1809.

Navigation between this city, and Albany opened sixteen days earlier this year than the last.

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For the Scientific American.

The Carpet Manufacture.

(*Continued from our last*)

The succession of colors must be determined by means of a design paper, which represents the design or figured pattern intended to be produced by plain weaving of the party-colored yarns. Design paper used by weavers for figured weaving, being ruled with squares, which are numbered across the top and down the length, and it must contain the entire figure of the pattern which it is intended to produce in the fabric, and which pattern is to be repeated thereon at regular intervals along the piece; and, supposing that the ground whereon the pattern is to be represented, is to be all of one uniform tint, the whole of the threads may be dyed with that color previous to applying the party-colors,—the dye being chosen of such a nature that it will readily give place to the stronger party-colors which are to be applied. The size of the cylinder must be so chosen that its circumference will be equal to the length of yarn which the warp will take up for weaving, from the commencement to the end of the pattern, where it will join to the preceding, and to the succeeding repetition of the pattern, taking into consideration the contraction of the length of the warp which will result from the gathering up of the yarn in weaving, and which contraction varies very greatly in different kinds of fabrics. Whatever number of squares the length of the design paper occupies, the circumference of the cylinder must be divided into a like number, or the double or the treble that number, if the cylinder is large in proportion to the pattern; which is easily done by applying a tape painted with suitable divisions upon it around the circumference of the cylinder, and fastening it with pins to the blanket cover. The design paper should be laid out in large squares, as the printer has to distinguish readily the succession and order of the different colors. It may either represent a figure to fill the breadth of the intended fabric, or one which is to be repeated several times side by side in the breadth, and each square may either represent a single thread or a number of threads according as the texture is to be fine or coarse. Repetitions of the *same* figure in the breadth will admit of several threads being colored alike at one operation, and the trouble of separating threads may be avoided by keeping the coils of the different threads distinct from each other upon the cylinder. In applying the colors to each set of yarns, either the first or the last of these impressions, which is made when the cylinder stands at its division 1, must be of such a decided character, that its place on every thread can always be distinguished with certainty; or a narrow black impression may be made across every set of the threads when the cylinder stands at its division 1, as a common starting place for all the threads, and for all the sets of threads; which decided impressions, or narrow black impression, in consequence of the circumconvulsions which the threads make around the cylinder, will be repeated at every place along the length of each thread, when the repetitions of the pattern are intended to begin and to end. In short, when the party colored threads are afterwards formed into a warp, the marks will indicate the junctions of the successive repetitions of the pattern: and if the threads are all so adjusted that those marks on each thread will range in a straight line, square across the breadth of the warp, then a correct pattern will be formed by the party colors of the threads; and all the precaution that is required during the progress of the weaving is to keep all the threads so adjusted in length that all others of the marks at every succeeding repetition of the pattern, shall continue to range in straight lines and square across. To ensure this condition, a clamp is used, which is composed of two straight rulers, united by screws, which draw the edges of the two rulers together, and their adjacent edges are covered with cloth. This clamp is applied across the warp, with one of its rulers above the yarns and the other below them, near to the place where the marks must range in a straight line, square across the warp, and there the clamp is fastened by its screws, so as to hold all the threads fast between the edges of its two rulers, in order to confine them to their relative positions end-ways, in respect to each other. As the weaving proceeds, the clamp advances along with the yarn; and when the length of the pattern has been woven, the weaving must be suspended, while the screws of the clamp are loosened, to set it free on the yarns, and it is then taken back along with them, to the next succeeding marks; and, if those marks do not range in a straight line, and square across the warp as they ought to do, those yarns which are forward must be pulled back or stretched until the marks are made to range and then the clamp is to be again screwed fast on the yarns to confine them in their true relative positions, whilst another length of pattern is woven; after which the clamp is again shifted to the next succeeding set of marks and so on until the weaving of the whole piece is completed. This method of working with the clamp during the progress of the weaving is only requisite in case the yarns are drawn off at once from the bobbins to form the warp in the loom as the weaving goes on without using a yarn-beam:—but, if the warp is formed and gathered on a yarn-beam by a previous operation to the weaving, then the clamp must be used in the manner above described during the operation of beaming, but will not be afterwards required during the weaving.—GILROY.

(*To be Continued.*)

Starch.

Starch is a white pulverulent substance, composed of microscopic spheroids. Ordinary starch may be extracted from the following grains:—wheat, rye, barley, oats, buckwheat, rice, maize, millet, spelt; from the silioquose seeds, as beans, peas, lentiles, &c.: from tuberous and tap roots, as those of the potato, the manioc, arrowroot, bastata, &c. Different kinds of corn yield very variable quantities of starch. Wheat differs in this respect, according to the varieties of the plant, as well as the soil, manure, season and climate. Wheat partly damaged by long keeping in granaries, may be employed for the manufacture of starch, as this constituent suffers less injury than the gluten, and it may be used either in the ground or unground state.

STARCH WITH UNGROUND WHEAT.—The wheat being sifted clean, is to be put into cisterns, covered with soft water, and left to steep till it becomes swollen and so soft as to be easily crushed between the fingers. It is now to be taken out and immersed in clear water of a temperature equal to that of malting barley, whence it is to be transferred into bags which are placed in a wooden chest containing some water, and exposed to strong pressure. The water being rendered milky by the starch being drawn off by a tap, fresh water is poured in, and the pressure is repeated. Instead of putting the swollen grain into bags, some prefer to grind it under vertical edgestones, or between a pair of horizontal rollers and then to lay it in a cistern, and then separate the starchy liquor by elutriation with successive quantities of water well stirred up with it. The residuary matters in the sacks or cisterns contains much vegetable albumen, and gluten, along with the husks, when exposed to fermentation, it affords a small quantity of starch of rather inferior quality.

The above milky liquor, obtained by expression or elutriation is run into large cisterns, where it deposites its starch in layers successively less and less dense; the uppermost containing a considerable proportion of gluten. The supernatant liquor being drawn off, and fresh water poured on it, the whole must be well stirred up, allowed again to settle, and the surface liquor again withdrawn. This washing should be repeated as long as the water takes any perceptible color. As the first turbid liquor contains a mixture of gluten, sugar, gum, albumen, &c., it ferments readily, and produces a certain portion of vinegar, which helps to dissolve out the rest of the mingled gluten, and thus to bleach the starch. It is, in fact, by the action of this fermented or soured water, and repeated washing that it is purified. After the last deposition and decantation, there appears on the starch a thin layer of a slimy mixture of gluten and albumen, which, being scraped off, serves for feeding pigs or oxen; underneath will be found a starch of good quality. The layers of different sorts should be then taken up with a wooden shovel, transferred into separate cisterns, where they are agitated with water, and passed through fine sieves. After this pap is once more well settled, the clear water is drawn off, the starchy mass is taken out, and laid on cotton cloths in wicker baskets, to drain and become partially dry. When sufficiently firm, it is cut into pieces, which are spread upon other cloths, and thoroughly dessiccated in a proper drying room, which in winter is heated by stoves. The upper surface of the starch is generally scraped, to remove any dusty matter, and the resulting powder is sold in that state. Wheat yields upon an average, only from 35 to forty per cent of good starch. It should afford more by skilful management.

Another plan is to crush wheat between iron rollers, and then laid to steep in as much water as will wet it thoroughly, in four or five days the mixture ferments, soon afterwards settles, and is ready to be washed out with a quantity of water in the proper fermenting vats. The proper time allowed for the steep. is from 14 to 20 days. The next process consists in removing the stuff from the vats, into a stout round basket set across a back below a pump. One or two men keep going round the basket, stirring up the stuff with strong wooden shovels, while another keeps pumping water, till all the *farina* is washed from the bran. Whenever the subjacent back is filled, the liquor is taken out and strained through hair sieves into square frames or cisterns, where it is allowed to settle for 24 hours: after which the water is run off from the deposited starch by plug taps at different levels in the side. The thin stuff called *slimes*, upon the surface of the starch, is removed by a tray of a peculiar form. Fresh water is now introduced, and the whole being well mixed by proper agitation, is then poured upon fine silk sieves. What passes through is allowed to settle for 24 hours, the liquor being withdrawn, and then the slimes, as before, more water is again poured in, with agitation, when the mixture is again thrown upon the silk sieve. The milky liquor is now suffered to rest for several days, 4 or 5, till the starch becomes settled pretty firmly at the bottom of the square cistern. If the starch is to have the blue tint, called Poland, fine salt must be mixed in the liquor of the last seive, in the proportion of two or three pounds to the cwt. A considerable portion of these slimes may, by good engagement be worked up into starch by elutriation and straining.

The starch is now fit for boxing, by shovelling the cleansed deposite into wooden chests, about 4 feet long, 12 inches broad, and 6 inches deep, perforated throughout, and lined with thin canvass. When it is drained and dried into a compact mass, it is turned out by inverting the chests upon a clean table where it is broken into pieces four or five inches square, but laying a ruler under the cake, and giving its surface a cut with a knife, after which the slightest pressure with the hand will make the fracture. These pieces are set upon half burned bricks, which by their porous capilliary imbibe the moisture of the starch, so that its under surface may not become hard and horny. When sufficiently dried upon the bricks, it is put into a stove, (which resembles that of a sugar refinery,) and left there till tolerably dry. It is now removed to a table, when all the sides are carefully scraped with a knife; it is next packed up in the papers, in which it is sold; these packages are returned back into the stove, and subjected to a gentle heat during some days, a point which requires to be skilfully regulated.

A patent was obtained for bleaching starch by chloride of lime in 1821. Chlorine water would probably be preferable, and might prove useful in operating on damaged wheat. During the drying, starch splits into small prismatic columns of considerable regularity. When kept dry it remains unaltered for a very long period.

Mr. Ames, an American artist, has been commissioned to take a portrait of Pope Pius IX. and has commenced the work.

More about Staite's Electric Light.

At a recent lecture at New Castle upon Tyne, Mr. Staite observed that the experiment of the charcoal points, and the phenomena of the voltaic arc, with powerful batteries were well known. The difficulties hitherto experienced had been—1. The economical production and application of the electric currents.—2. The discovery of a suitable material for the developement of the light.—3. The rendering of the light permanent (the greatest difficulty of all.) By what means, and to what extent, he had overcome these difficulties, Mr. Staite informed his audience. He produced, under a glass receiver, a brilliant light before which the gas jets of the lecture-room turned, not pale, but yellow. The peculiar characteristics of the electric light were its purity and volume. The most delicate shades of color might be detected, while the eye was not distressed by its effects. The same quantity of light, developed by gas, or any other known means, would be absolutely unendurable. That the light was not the result of combustion, strictly speaking, was evident.—There could be no combustion without the presence of oxygen; and, as the light was developed to the best advantage under a closed glass, from which supplies of atmospheric air were excluded, it was quite certain that combustion had nothing to do with the matter.—The light in fact, the lecturer remarked, could be produced as readily in water as out of it.—He showed its peculiar applicability to coal-mining, for it could not explode the foulest atmosphere. He then came to the comparative cost of the electric and other lights.—With a battery consisting of four small cells, a light was developed equal to 380 mould candles (sixes,) or 64 cubic feet of the best gas burnt in the standard burner.

This was effected by a consumption of zinc equal to 77-100ths of a pound, being little more than 3-4lb. of zinc per hour. When the light, however, was brought to it maximum, by increasing the distance of the electroids to their limit, the light was increased nearly threefold, while the current itself was reduced to about three-fifths in quantity. This curious fact (continued Mr. Staite) I have frequently observed before. So that the light, when developed under the best circumstances consistent with its permanence, was produced by a consumption of a seventh part only of a pound of zinc per hour—and the light equal to 380 tallow candles. Assuming that the zinc so consumed was worth one half penny, and that the cost of the working solution, deducting the value of the products (sulphate of zinc, &c.,) was as much more, we have the following comparative result:—Electric light, 1d per hour; gas light, equal thereto, 6d to 8d; tallow candles, 7s 6d. In conclusion, M. S. observed, "By a careful comparison of all modes of effecting artificial illumination, I think I am justified in saying that there is no light so cheap as that evolved by voltaic currents of electricity; and there is certainly none which exhibits such pure and brilliant results. The absence of all smoke and flame, and noxious gases—the non-consumption of oxygen—the impossibility of its igniting surrounding substances,—and the simplicity of the apparatus are powerful recommendations for the adoption of the light in all places where purity, and brilliance, and safety, and economy are sought for."

Leather.

In consequence of the unfavorable accounts from the tanners respecting the scarcity of bark to tan the stock of hides now out, and the consequent delay which is likely to occur in bringing the spring stock of leather to market, and also the great reduction of the stock on hand, caused by the heavy auction sales, through the summer, months. Prices have improved and may now be quoted at one cent higher than the last year's sales.

Diamonds in North Carolina.

The Raleigh Register, says:—"We have been presented by Beaumont, the intelligent correspondent of the Southerner, printed at Richmond, Va., with a piece of flexible sand stone, found at the Linville mountain, in Burke county, the presence of which is said to be an unerring test that there are diamonds about."

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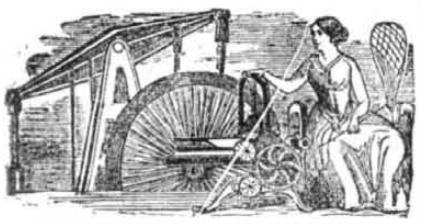


New Inventions.

Machine for the Manufacture of Coffee Mills.

Mr. A. F. Ward, of York, Pennsylvania, has invented a machine for cutting the teeth in wrought iron coffee mills. It is so arranged as to cut both the ring and the burr in one machine, and it will in about four minutes make a mill far superior to that made by hand and thus making them too about fifteen times as fast. It is so arranged that any desired slant may be given to the teeth and also any desired slant given to the ring and burr by very simple alterations. It can be propelled by about one horse power and can be attended by one boy of ten years of age. Thus a boy and a horse will do in one day what fifteen men by hand would be required to do, and at the same time making far superior work. It will also answer all the purposes of punching, &c. belonging to coffee mill business.

Improvement in Carriage Springs.

Mr. E. T. Sprout, of Springville, Pennsylvania, has invented a new improvement in the carriage, by connecting the spring and reach together—the spring forming part of the reach. They serve thus combined as braces to the hind axletree. The body loops are also a spring, and there is nothing but steel from the axletree and bolster to the body of the carriage. The motion of the carriage is thereby rendered very easy, and only about fifty pounds of common steel spring is needed for a one horse vehicle. By this improvement carriages can be made lighter, cheaper, more simple and more durable. The spring used is the half elliptic, and the benefit of the whole elliptic is gained for the motion of Mr. Sprout's improvement, an engraving of which we shall be able to present in a future number. Application has been made for a patent.

Improvement in Steam Boilers.

To introduce water into steam boilers, when engines are in operation, without the use of pumps and valves, as is now customary, has been long a desideratum. Eliakim Ingalls, Esq. of Providence, R. I. has patented an invention securing this benefit. If we are rightly informed, his improvement takes the water from almost any locality and introduces it into the boiler, while the steam is up, and the engine in operation, and it is of such construction as to be easily appended to an engine already in use. The same object, however, has been attained before and described in our columns.

Manufacture of Pure Iron.

One of our exchanges says that Mr. Dixon of Jersey City, has succeeded in making pure iron in masses of any magnitude and that this new metal will be of great utility in the arts, first for engraving, "superseding the use of steel engravings," because this pure iron can be hardened to that degree that thousands can be worked off without dimming the original lines, "especially of that kind of engraving called mezzotint."

[This *scientific* information regarding *pure iron being hardened*, to supersede steel will undoubtedly make some of our iron manufacturers stare, to us it is a puzzler.

Improvements in Ornamental Mouldings.

Messrs. Dorrand, of Providence, R. I, have made some valuable improvements both in the machinery and the use of different materials for mouldings and sash work.

Ventillating Bed Top.

A patent has been taken out in London, by Wakeling & Son, for a ventillating bed top, which, instead of being close as usual, has a double tester or a tester made in two parts, one raised above the other, and connected by open trellis work of brass, through which on the curtains being drawn, the air, as it becomes heated, has a free escape.

Brantz's Unbranning Machine.

One of these machines was exhibited recently in this city, and astonished a number of merchants on Change. We noticed this invention last summer, a sample of its work having been sent us for examination.—The machine is a grand invention. The berry comes out entire, but robbed of its brown outer covering, purely white, polished, and resembling wax. In this state it has lost all its offal, and every particle will make extra flour, the berry having wasted but about two pounds to the bushel in the operation.

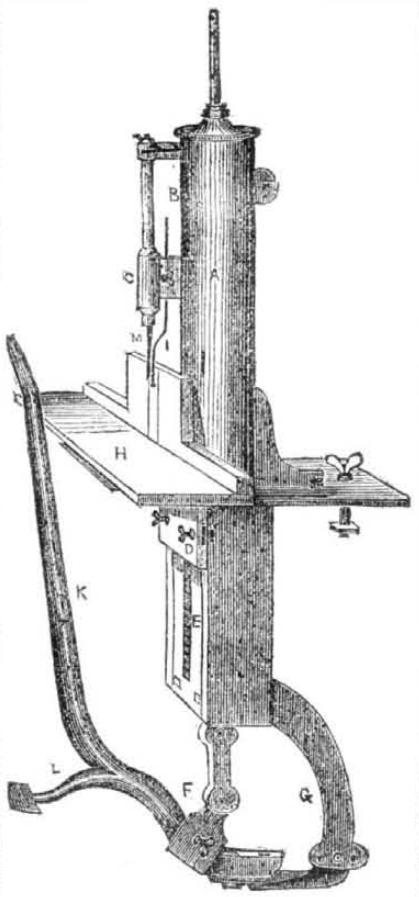
Important Surgical Discovery.

The Boston Evening Journal states that Mr. Samuel L. Bigelow, a teacher in the Tremont Medical School, has made known a discovery of the highest importance as it regards Surgery. It consists in a new and certain method of procuring the union of incised wounds by first indention in a few hours. A paper was read before the Boston Medical Society by Dr. J. H. Bigelow, a surgeon of the Hospital, who stated that it had already been introduced there with success. It is said to be a preparation of gun cotton and sulphuric ether—the two great lions of the day yoked in some way for *drawing* together wounds.

Telegraph Invention.

A Cincinnati paper announces that George O. Davies, of that city, is engaged in getting up a telegraphic instrument, now nearly completed, upon an entirely new and original plan; by which it is supposed that 150 or 190 letters per minute can be transmitted, and read with as much facility as ordinary writing, and without the least possibility of mistaking one letter for another. Morse's Telegraph ordinarily transmits from 60 to 80 per minute.

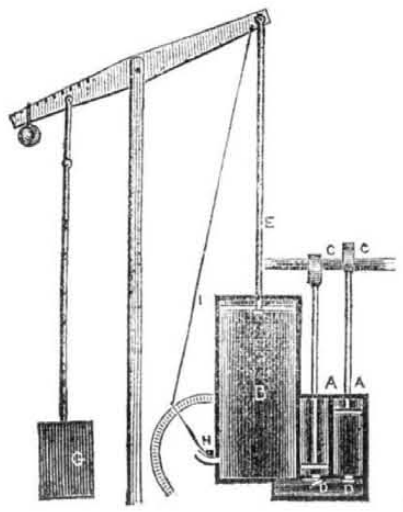
Improved Morticing Machine.



This compact and beautiful Morticing Machine has been invented by Mr. C. Bliss, of Hartford, Conn., and for which he has applied for letters patent. The nature of it is principally the extreme portability and ease with which it can be made of great benefit to the joiner. It is mostly all of cast iron and can be attached to any bench, and after being used can be unscrewed and laid out of the way under the bench, as it occupies but a very small space.

Description.—A, is a cast iron cylinder, in which is a spiral spring attached by the upper end to the vibrating chisel stock C, and by the lower extremity to the treadle F. The chisel M, is fixed in the stock and the work to be operated on is placed on the *rest board*, or bench H, being held snug to the bench by I, a rod for that purpose, which can be shifted up and down by a screw. If the work is light the handle K, is more convenient than the tread stirrup L. By operating with the handle, or foot board, our readers will perceive at once how the chisel is worked up and down in the slot B, and by a clamp on the top of the chisel stock, the chisel is changed or shifted with the left hand, as rapid as the hand can turn it. E, is a rack for elevating or depressing the rest bench H, and D are screws for making it fast and firm at any desired point to accommodate the size of the work to be morticed. On the top of the cylinder is a slender rod with an orifice through it whereby an additional spring can be added to the machine passing over a pulley behind the machine and to be attached to the plate behind H. For strength, compactness and simplicity this machine is worthy of much commendation. Further information may be obtained of Mr. Bliss at Hartford.

Pneumatic Regulator.

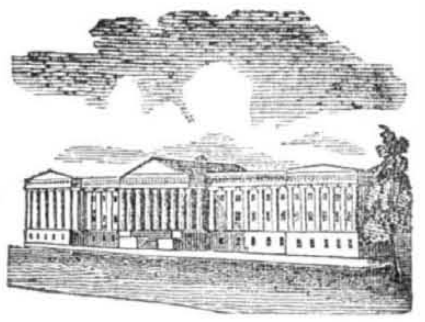


This apparatus is the invention of Mr. Jas. Harvey, of Craigsville, Orange Co., N. Y.—It is the application of a double pneumatic pump to supersede the use of the *governor* for water wheels, especially for factories, where so much damage is often done to machinery by the breaking of some shaft, by which the speed of looms and frames are so suddenly increased before the governor acts in arresting the speed of the main driver.

Description.—A A, are the two air pumps constructed like any force pump. The air is admitted by openings from the other side and discharged through valves D D, into a cylinder B. This cylinder operates the water gate G. The pumps A A, are worked by eccentrics C C, on a shaft near the main driver, or it may be on the main shaft, and these pumps need not be above one inch in diameter—but half an inch diameter may be sufficient. According as the shaft is running swift or slow, so is the air compressed in B, and the piston elevates the balance beam by the shackle bar E, and depresses G, the gate. H, is a regulating faucet with an index and hand for correct and pointed regulation, so that the exact amount of condensed air may be regulated to keep the gate to the exact point of supply, and it will easily be perceived that when any of the machinery is thrown off and the speed of the main driver increased, that it will act very rapidly to elevate E, and shut off the water entirely. I, as a rod connected with the faucet H, and can be set so as to allow the faucet to be closed by the elevation of E, or only to be closed to a certain point as may be required for quick action upon the gate.—This apparatus need not occupy more room than twelve or eighteen inches and it might easily be applied to regulate the speed of locomotives, at least it is a better machine for that purpose than the hydraulic regulator invented in Glasgow and noticed some time ago in the Scientific American. The inventor we believe has taken legal measures for a peculiar way of applying it The above engraving will be perfectly understood by any of our mechanical readers.

French Sewing Machine.

Late French exchanges say that Jean le Capelin, petit, or little John Capelin, has invented a sewing machine that makes 240 stitches per minute, which by the turn of a screw are changed from fine to coarse in a moment. It will sew, stitch, and make edgings by the same movement.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending March 21, 1848.

To Charles Perley, of New York City, for improvement in Ship's Windlasses. Patented March 21, 1848.

To Renssalaer D. Granger, of New York City, for improvement in Cooking Stoves.—Patented March 21, 1848.

To Alexander H. Hart, of Chagrin Falls, Ohio, for improvement in Tuyers. Patented March 21, 1848.

To John Coates, of Manchester, England, for improvement in preparing fabrics for printing. Patented March 21, 1848. Date of English Patent April 27, 1847.

To Chauncey W. Case, Syracuse, N. Y., for improvement in apparatus for Turning. Patented March 21, 1848.

To Stephen Porter, of Geneva, N. Y., for for improvement in Washing Machines. Patented March 21, 1848.

DESIGNS.

To Peter Van Ness and Abraham Wood, of New York City, for Design for Forks, Knives and Spoons. Patented March 21, 1848.

INVENTOR'S CLAIMS.

Planing Metals.

By Alfred C. Jones of New Orleans, La. Improvement in Portable machinery for Planing Metals. Patented 17th September, 1847 Claim—Having thus fully described the manner in which I arrange the respective parts of any portable machine for planing metals, what I claim therein as new and desire to secure by Lettere Patent is the particular manner in which the slides and the apparatus for moving them are combined and arranged with each other, and with the bar, by which arrangements and combination the said instrument is rendered portable, and capable of being attached to a work bench or to the work upon which it is to operate. I do not make claim to either of the individual parts when taken alone, as of my invention, slides such as I have described, and the giving motion to them by means of screws or of racks and pinions, being well known devices. I therefore, as above stated, limit my claim to the particular combination herein set forth, by which I have produced a tool which is substantially true and of great utility.

Smut Machine.

By Jacob Benner, of Liberty, Penn. Improvement in Smut Machines. Patented 11th September, 1847. Claim.—What I claim as my invention and desire to secure by letters patent, is the making the outer case of the machine in several compartments, one above the other as described, in combination with the tubes or spouts attached to the periphery of, and opening into the outer casing, to conduct the grain from one compartment to another in succession as described. And I also claim in combination with a casing so constructed as above claimed, the beaters attached to the periphery of a perforated or wire gauze cylinder open at both ends that the rotation of the beaters may induce a current or currents of air outwards to discharge the dust and other impurities through the apertures between the bars of the outer case, and to aid in delivering the grain to the conducting tubes as described.

A singular accident happened to J. Coles, Esq., of Taunton, England. While pulling up his boots, he strained the lids or his eyes so much as to break a small blood vessel, which caused the loss of sight of one eye, and much injured the other.

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NEW YORK, APRIL 1, 1848.

Lead Pipe for Domestic Purposes.

We have received a number of communications lately requesting our candid opinion relative to the good or evil effects from the using of lead pipe to conduct water for domes tic purposes. We have expressed our opinion before on this subject, and have lately made many inquiries and collected opinions on the subject from a number of living sources, and have reason to change but little from the opinion we formerly expressed that "lead pipes were dangerous to use for domestic purposes." In some situations lead pipe is perfectly safe, and more safe to use in the conducting of river water than water from many springs.—London, New York and Philadelphia, we believe have suffered nothing from the use of lead pipe. We believe it is perfectly safe to use lead pipe in the conducting of filtered rain water, that is, those cisterns where the rain water is filtered through a bed of sand or charcoal. They are common in many parts of the country, and when the rain water is conveyed from tin roofs, it comes from the cisterns, if they are well built and bedded, as limpid as crystal and sufficiently imbued with carbonic gas to make it healthy. Mr. Hardy, in a communication to the Massachusetts Ploughman of the 5th of February, on this subject, seemed to be impressed with the belief that the water in *all our wells was filtered rain water*. He forgot the sulphurated hydrogen springs of Clinton and the salt springs of Salina.

We have had some experience in the use of water conveyed through lead pipes and have never felt any evil effects—but we have both seen and heard of the evil effects of it upon others. We have also had no little experience in the chemical preparations of lead, copper and arsenic, and have no hesitation in saying that lead at least can be used in some places with impunity, while in other situations the use of it would be at the peril of health and life. The editor of the Christian Citizen, in an article published not long since, and when just recovering from disease, uses the following language: "We take this opportunity to state that the sole cause of all the illness we have suffered the past year, has been *the use of water pumped from a well through a lead pipe*. With almost every particle of food and drink we have taken into our system for more than a year, we have taken, by this means, small particles of the worst mineral poisons; and the result has been days and weeks of the most intense suffering." And in another article, the same paper states that an attack of severe illness experienced by Dr. Woodworth of the Massachusetts State Lunatic Asylum, in Worcester, was caused by the use of water conveyed through lead pipe. The oxide of lead was detected in the water by analysis and the State removed the pipes, although the water works were in perfect order; and not long ago Mr. E. Highley of Templeton, came to his death by the use of water drawn through a lead pipe.

The acetate of lead is a bad poison and was the means of creating numberless terrible diseases in Herefordshire, England, among the cider makers, who at one time used lead in their presses. The antidote to acetate of lead is glauber salts which converts the acetate into inert sulphuret. The use of river water and that of many springs by carbonizing, or creating the sulphate on the inside of lead pipes, renders them safe, but the carbon crust if broken off and drank, is dangerous. The bichromate of potass will detect lead in water. A small quantity of the water should be placed in a watch glass, and if a drop of the chrome be dropped into it and a light curdy yellow matter be precipitated, it is an evidence of lead, and for such water lead pipe should not be used. Or if the lead is in the water in a state of white carbonate, if a little of the supercarbonate of ammonia be put into the water to precipitate the lead, and if the precipitate be taken and dissolved in sulphurated hydrogen water and become black, it is a sure sign of the carbonate of lead being in the water.

The condition of water for supplying villages and cities through lead pipes should be carefully attended to. The presence of lead in water may be detected by agitating the water well in contact with air and then subjecting the deposite to analysis. If by experiment any water be found to act upon lead and hold it in solution, such water should not be conducted for use through lead pipes, but if the water be found not to hold the lead in solution, it is perfectly safe to use for domestic purposes conveyed through lead pipes. Water can be conveyed from sulphur springs through lead pipes with impunity but not from springs where there is uncombined chlorine or carbonic acid. The lead ores are generally combined with sulphur, hence the safety of water taken from such situations.

If hydrochloric acid be added to water and a precipitate is formed, and it ammonia be added and the precipitate remains unchanged, it is a sign that the precipitate is the chloride of lead. Sulphuretted hydrogen gas produces black precipitates of lead.

Every person knows that lead is a poison in almost all its combinations, and as the salts of the oxide of lead are colorless any person can apply the above tests and decide for themselves.

Infringement of Patents.

The unselfish part of community is beginning to be thoroughly roused to do something for the protection of Inventors' rights. Too long have men of genius been deprived of their just rights. Inventions have been stolen and patentees have been plundered and have not been able to get a redress of their grievances. In a great number of instances speculators have made themselves rich by by the inventions of men who had to sell their patent rights for a mere pittance, and while the purchaser, or purloiner has been enabled to flaunt in silk and lace, the inventor has often walked the streets in rags. Many suppose that as some patents have been infringed with impunity because the patentee was either too poor or averse to law to prosecute for infringement, that patents have become like water spilt upon the sands. But justice will not always slumber—retribution will yet take hold of those who do wrong. Agents of patents should not be usurers to irritate public feeling by exorbitant prices, or a narrow selfishness—the public good should always be looked after and then the public will protect the patentee.

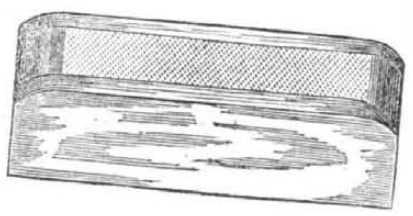
Yankee Manufactory.

In the village of Birmingham, Conn., there is a machine for making brass chains, and works as if endowed with human instinct. By every turn of the driving wheel the wire for the chain is wound off a reel and pulled forward to its proper place and position, the end running through the last formed link, exactly the length for two links cut off, first one end turned over into a link, then the other, the former dropping down through the machine, leaving the latter projecting above, so that the wire can be instantly pushed through it, when it is cut off, two more links formed, and so on, until a large roll of wire is transformed into a perfectly-formed chain by the unaided operation of self-acting machinery, hardly a finger having been lifted during the process.

Important to Emigrants.

An important bill has been reported by Mr Grinnell, from the Committee on Commerce, a few days since, which provides for the ventilation of vessels conveying passengers between Europe and this country. Companion ways are to be erected over the apartments, so that one door may be always open. Metallic ventillators are to be placed in the apartments with receiving and exhausting caps, to receive fresh air, and expel foul air The bill also provides for commodious cooking ranges. A penalty of $200 for each violation of these rules. There are other regulations which Mr. Grinnell intends to introduce as amendments, which he thinks will prevent ship fevers and other kinds of sickness among immigrants. The bill repeals the laws limiting the number of passengers to two for every five tons.

Steel Pen Renovator.



The above cut is a representation of a method for removing many incrustations that are the attendants of steel pens. It is the contrivance of a Mr. Hancock, and is not new now, having been described some time since in the Glasgow Engineers' Magazine. But as it is very simple and we have not seen it in use, we think that some of our Eastern friends should introduce it, as they can do up these things about the slickest of any other folks, the neat handed Italians not excepted.

This instrument is simply a piece of very fine wire card, such as is used in carding the finest wool, and it is mounted on a neat mahogany frame, or the frame may be made of fine bird's eye maple or good black walnut. On the two ends of the frame is placed a piece of velvet, and when a steel pen becomes clogged or rusted, or if greasy, a few wipes over the card drawing the pen towards the velvet end of the instrument, will immediately make a new pen of it. This is superior to a glass full of shot and it can be made very neat and cheap, so as to look handsome upon a desk. A brush made of stout bristles placed very compact and made in the very same manner, will answer the same purpose, but the bristles must be of the best and most rigid quality. As steel pens save much valuable time to the pensman, not requiring mending, and as summer is approaching when ink is apt to ferment and in that state have a strong affinity for the metal, the above little instrument may in that case be a friend to many, who like ourselves are often in trouble with our pens for want of such a friend to let off their turgid spleen by a graceful wipe.

Transmission of Motion, Speed and Power.

Wheels are the most beautiful as well as the most economical means of transmitting power from the main driver to the minutest points of connected machinery. No driven part of machinery can exert more power than is in the main driver—there is always a loss however small by friction (resistance.) And whenever friction or resistance is entirely overcome in a machine then may we look for perpetual motion, and not before. Cog wheels are much used in the transmission of power and speed, to the rotary motion of which, as Ewbank says, "we are to attribute the great superiority of modern over ancient mechanism." In factories the belt and pulley have justly supplanted the old cog wheel movements, but there are other small machines such as lathes and clocks, that are mueh better operated by cog wheels than any other mechanical means. If a great number of shafts are wanted to be driven and only a small space to pack the machinery, cog wheels are the best for this purpose.

The Hydraulic Ram.

The object of the hydraulic ram is to raise water above its natural level, which is done by a simple hydrostatic principle. If a bar of iron be made to stand upright, it will press with its whole weight on the point on which it rests; but if a column of water be poured down a perpendicular tube, it exerts a force not only downward but laterally, so that it would have a tendency, if the tube was closed at the bottom, to expand the bottom of the tube into a globular form, by pressing on each side equally. If the tube be very long it must be capable of resisting a great pressure at the lower end or it will burst. If now a smaller pipe be made to connect with this tube at the bottom, and a stop cock be placed at or near the point of junction, the pressure of the water will be very great at the place where the stop cock is. If the cock be suddenly opened, so great is the pressure that a jet of water will rise in this pipe to a considerable distance above the top of the other pipe. If the cock be opened and shut successively, a continued stream is obtained from the smaller pipe. This is the simple principle of the Water Ram.

The two Grandest Works in the World.

NIAGARA SUSPENSION BRIDGE.

"I raised (says the distinguished Engineer) my little wire cable on Saturday, and anchored it securely both in Canada and New York. To-day, (March 13,) I tightened it up, and suspended below it an iron basket, which I had caused to be prepared for the purpose, and which is attached to pulleys along the cable. On this little machine I crossed over to Canada, exchanged salutations with our friends there, and returned again, all in fifteen minutes. The wind was high, and the weather cold, yet the trip was very interesting to me—up as I was 240 feet above the rapids, and viewing as I did, from the centre of the river, one of the most sublime prospects which Nature has prepared on this Earth of ours.

"The machinery did not work so smoothly as I wished, but in the course of this week I will have it so adjusted that any one may cross in safety."

TRIAL OF AN IRON TUBE.

The first of the eight great iron tubes, says the Liverpool Albion, required for carrying the Chester and Holyhead Railway over the Menai Strait was tested on Saturday, at Chester, in the presence of Mr. Stephenson the projector, and a large number of engineers. All support being removed, the tube had a clear span of 400 feet, each end resting on a stone pier. The experiment was then tested by running locomotives and heavily laden ballast wagons through—one train of 28 wagons filled with iron, weighing upwards of 300 tons. The deflection of the tube was not more than a few inches.

It is strange that both the above trials were made on a Saturday.

The Climate of Mexico.

The climate of Mexico, is peculiar; beautiful, calm and serene, but the atmosphere has so much less oxygen in it than ours that the whole economy of life is changed. The pulsation is increased almost double in frequency and there is a want of that vigor and robust feeling which our climate affords a healthy man, and once reduced by disease there, it is almost impossible to regain health and strength. The mornings are cool, too cool, for a man in a relaxed state of health to exercise without danger of taking cold which is almost as bad as any other disease there; and the days are so hot that the rays of the sun cannot be borne without producing fever. The natives wrap up in cloaks in the morning and retire at noon.

Notice.

In connection with the able articles from the pen of Mr. Gilroy, we will commence next week a series of articles on the "*Economy of Power in Cotton Factories*," from the pen of a scientific and thoroughly practical gentleman, long and intimately engaged in the cotton manufacture.

A new steamboat built of live oak and cypress, has just been launched on Lake Erie. She is to be called the "Maid of the Mist."

Scientific American—Bound Volumes.

The second volume of the Scientific American, bound in a superb manner, containing 416 pages choice reading matter, a list of all the patents granted at the United States Patent Office during the year, and illustrated with over 300 beautiful descriptive engravings of new and improved machines, for sale at this office—Price $2,75. The volume may also be had in sheets, in suitable form for mailing—at $2.

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For the Scientific American.

The Electric Telegraph.

(Concluded from our last.)

1747.—Franklin communicated his observations, in a series of letters to his friend Collinson, and explained in a satisfactory manner the phenomena of the Leyden phial.

Dr. Watson, and others, conveyed the electric fluid across the Thames, at Westminster bridge, making the width of the river a part of the circuit. He proved that the ground also conducted the fluid, by an experiment with a wire 150 feet long, supported upon baked sticks, using the ground as half the circuit. In another experiment he made the dry ground a part of the circuit for a mile, and found it to conduct equally as well as water. The transmission of electric fluid was instantaneous.

Mr. Ellicott constructed an electrometer for measuring the quantity of electricity, and Mr. Maimbury, of Edinburgh, electrified two myrtle trees in the month of October, and they put forth small branches and blossoms sooner than those which had not been electrified. The same experiment was tried upon seeds sown in garden pots, with the same success. Mr. Jallibert, Mr. Boze, and the Abbe Menon, at Angers, tried the same experiment upon plants by electrifying bottles in which they were growing. They proved that electrified plants always grew faster, and had finer stems, leaves and flowers, than those that were not electrified.

1748.—Franklin and his friends held an *electrical feast* on the banks of the Schuylkill near Philadelphia, which was amusing as well as scientific. He gives an account of it to his friend Collinson in these words:—"Chagrined a little, that we have hitherto been able to produce nothing in this way of use to mankind: and the hot weather coming on, when electrical experiments are not so agreeable, it is proposed to put an end to them for this season—somewhat humorously, in a party of pleasure, on the banks of the Schuylkill. Spirits at the same time to be fired by a spark sent from side to side through the water without any other conductor than the water: an experiment which we sometime since performed to the amazement of many. A turkey is to be killed for our dinner by the *electric shock*, and roasted by the *electrical jack*, before a fire kindled by the *electrified bottle*: when the healths of the famous electricians of England, Holland, France, and Germany, are to be drank in electrified bumpers, and under a discharge of guns from the *electrical battery*."

1749.—Franklin first suggested his idea of explaining the phenomena of thunder gusts, and of the *aurora borealis*, upon electrical principles; and in

1752.—He completed his grand discovery, by experiments. He constructed rods, and brought the lightning into his house, to ascertain whether it was of the positive or negative kind. He succeeded in the experiment for the first time in April, 1753; when it appeared that the electricity was negative. On the 6th June, he met with a cloud electrified positively. His discoveries roused the attention of all Europe, and many distinguished electricians repeated them with success.

Towards the end of the 18th century, the science was extended by numerous and successful experiments.

1787.—Mr. Lomond, of France, invented the first electric telegraph of which we have an account. He communicated with a person in a neighboring chamber, by means of electricity: but it does not appear that it was used on extended lines.

1794.—Reizen made use of the electric spark for telegraph purposes, but never tested to any extent.

1798.—Dr. Salva, of Madrid, made a similar telegraph to that of Reizen. No description of his plans were ever seen, and probably were never given to the public.

Galvani, in 1890, and Volta in 1800, made as is well known, many very important discoveries.

1809.—Samuel Thomas Soemmering invented his voltaic electric telegraph.

1816.—Ronald invented an electrical telegraph, and tried it at his house, Hammersmith.

1832.—Prof. Morse was the inventor of the electro magnetic telegraph, and the first really practicable telegraph on the electric principle. All the telegraphs in Europe are invented subsequently.

1833.—The Baron Schilling, of Russia, constructed an electric telegraph, which was received with approbation by the emperor, who desired it established on a larger scale; but the death of the baron prevented it.

Counsellor Gauss and Prof. William Weber constructed one.

1836.—Taquin and Ettieyhausen made experiments with a telegraphic line over two streets in Vienna.

1837.—Alfred Vail invented an electromagnetic printing press.

Wheatstone made an electric needle telegraph.

Steinhell (Dr.), of Munich, erected between that city and Bogenhausen, a magnetic electrical telegraph. In the account he gives of his own telegraph, he says, that Belancourt established, in 1798, a communication from Madrid to Aranjuez (26 miles,) by means of a wire, through which a leyden jar used to be discharged, which was intended to be used as a telegraphic signal.

Mason, Professor of philosophy at Caen, (France,) made trial of an electric needle telegraph, at the college of that city, for a distance of about six hundred yards. He has since endeavored to simplify and improve his apparatus.

1837.—Davy's needle and lamp telegraph.

1838.—Mr Amyott, proposed in Paris to construct an electric telegraph.

Edward Davy—electric telegraph.

1840.—Alexander Bain—electric printing telegraph.

1841.—Wheatstone's rotating disc telegraph.

Ultramarine.

(Concluded from our last.)

To prepare ultramarine or lapis lazuli for painting, the mineral is first made red hot in the fire and then thrown into water to make it easy to pulverise. The best way however is to heat it in a crucible to keep it clean and then quench it in vinegar and keep it therein for a few hours, when the vinegar is poured off and the lapis lazuli ground fine in a flint mortar, when it may be calcined again and treated in the same manner to make perfectly impalpable. A paste is then made of 9 ounces Burgundy pitch, 6 of white resin, 6 of Carolina or Georgia turpentine, a small quantity of wax and 2 ounces of linseed oil. This is mixed all together in a stoneware vessel and boiled therein until it will form a lump when poured into cold water. The cement thus formed may be poured out of the vessel into water and made into cakes for use. Take then an equal weight of this cement and the calcined lapis and melt all in a glazed earthen vessel adding the calcined matter by degrees, stirring with a glass rod till all is well mixed, when it is pretty well heated and thrown into a large basin of cold water. When it is cooled it is kneaded like the dough of bread and rubbed over with the hands with linseed oil till the whole are well incorporated. Then put this cake into an earthenware vessel, the bottom of which should be rubbed with oil, and pour on it water of the warmth of blood. Let this stand for a short time and as the water softens the cake, it will lose the finest part of the calcined matter, which on gently stirring the water, or separating any of the parts of the cakes, will be suspended in water, and must be poured off with it into another vessel. The quantity of water must be then renewed and the same operation repeated a second, or third time and as the mass appears slow in giving the color it must be moved or stirred in the manner of kneading with a glass spitula, but not broken into small parts and so much of the color is extracted as to render it necessary for obtaining more, the water is heated to a greater degree. The result of these washings is the *ultramarine*. These three washings are then mixed with a boiling hot solution of two ounces salt of tartar or pearl ashes dissolved in a pint of water and filtered through clean paper. This is cooled and when the powder has fallen to the bottom of the vessel, the clear must be poured off and the powdered must be washed until all the pearlash or tartar is carried away. The ultramarine is then dried and is duly prepared for use.

Another method of purifying the ultramarine from the cement may be used, which is by pricking the yolks of eggs and moistening the matter with what will run out and working them together in a flint mortar, after which the mixture must be put into a lixivium of the tartar, or pearlash and proceeded with as before directed.

In order to free the ultramarine from that part of the water which cannot be poured off from it without carrying away part of the powder, let it be put into a deep coffee cup, and put candlewicks so as to hang over the edge with one end in the liquor and the moisture will be removed by capillary attraction, when the matter may be dried on polished marble, or glass. Another method from the one above, is to use beeswax and white resin mixed together in equal quantities instead of the compound pitch cement, and which on its being infused in water very warm, will make the lazuli give out its color much sooner.

Ultramarine may also be prepared without any cement simply by calcining it and levigating with pearlash, and washing and then soaking it in distilled hot vinegar. A greater quantity will be produced in this way, but lighter in the color. To make a fine ultramarine the lapis lazuli must be good, and to test this, if a small piece be made red hot and retain afterwards its hardness of color, it may be accounted good, but if it crumbles or turns brown, or dull and full of specks, it may be suspected. Ultramarine mixed with white flake and oil by the pallette knife can be compared with other parcels and judged of by its depth and clearness of color. Ultramarine from its great price is apt to be adulterated by a precipitation of copper and an alkali, and also fine smalt. Copper is a dangerous mixture, it will turn black in oils and green in enamels, as soon as fluxed. It is not so easy to adulterate with fine cobalt as it is difficult to mix on account of its hardness and is scarcely to be levigated by art to be as fine as the ultramarine rendered impalpable by the calcination it has undergone. The adulteration with smalt does not hurt it for enameling and it will stand as well for water painting, but it does not mix well with oil and it will fall from it if the mixture be very moisty, or become pasty if stiffer and never works freely. Copper adulteration may be easily detected by pouring some diluted nitric acid on a small quantity when it will soon dissolve and leave a greenish blue solution. Smalt may be detected, by trying it with oil, or mixing in water when the coarseness of the smalt will soon be detected.

The lapis lazuli is, when perfect, a very light blue color, with a transparent effect in oil, and in some degree in water, and will stand when used in painting without fading with whatever pigment it may be mixed. For these reasons ultramarine is of the highest value in every kind of painting, being equally serviceable in all, even in enamel, and though the Prussian blue on account of its cheapness may have lessened the use of it, yet this is to be considered as an injury to the art, as the skies of landscapes and many other parts of modern pictures shew their loss of it by their changing from a warm clear blue to a faint greenish tint.

Chemical Analysis.

The following is the plan pursued by Professor Loomis to detect prussic acid in the stomach of Mr. Matthews, murdered at Hallowel, Maine. The most volatile poison is prussic acid—therefore it was searched for first. He strained the substance through a linen cloth, leaving the solid parts in the cloth The fluid was placed in a retort, and heated, and the vapor condensed. Previously a small part of the fluid was taken on a piece of paper; and a drop of the solution of pure potassium, a drop of the solution of sulphate of iron and a drop of sulphuric acid put on the paper—this gave a blue color as far as it spread. It indicated the presence of prussic acid, though not with positive certainty. He then took the distilled portion and divided it into three parts. To one portion he added a small quantity of potassium, then a solution of iron, and a drop of sulphuric or muriatic acid. The potassium produced no effect—the sulphate of iron showed a turbid yellow—the acid showed a deep blue color. This indicated prussic acid. The second portion was tested with potassium, sulphate of copper—then with muriatic acid. The effect of the potassium of sulphate of copper was much as before; but when the acid was applied it produced a white color partially clouded, which soon subsided. This too, indicated prussic acid. The third portion was tested with nitrate of silver—it gave a white curdled precipitate. This white precipitate would be produced by prussic acid and by several other substances—but nothing but prussic acid would produce the curdy appearance. This precipitate was dried, heated, and a lamp applied to the retort. If there had been pure acid sufficient to fill the retort with cyanogen, it would have produced a peach-colored flame which in this case was not obtained. This experiment was repeated on the following Monday, and, during the intervening time, the retort was carefully corked. Then witness washed the solid portion left in the cloth. The washing having been added to the liquid before in the retort, from the whole there was now distilled nearly an ounce of transparent liquid. This was treated with nitrate of silver, which produced the curdy precipitate before described. This precipitate was dried, and placed in a glass tube an inch and a half in length, sealed at one end, and drawn out to a capillary tube at the other. On heating the precipitate, thus enclosed, cyanogen escaped from the capillary extremity, which instantly ignited, producing a distinct peach-blow flame. This flame is produced only by cyanogen gas, which is the base of Prussic acid. These tests are the ordinary and approved tests of Prussic acid. The first test applied was sulphate of iron. Hydrocianic acid is a compound substance. The substance that produces the blue color is cyanide of iron. Cyanogen is derived from Prussic acid. There is no other combination of the elements present that will give this color. Cannot say how long the tests now used for the discovery of narcotic poisons have been employed—know that there is no other combination of iron that will produce this color as well as he knows any other principle in science. The odor of Prussic acid owes its peculiarity to neither of the elements independantly but to the elements in their compound state. There is an odor to cyanogen—witness had experiments with it. It is always gas. The silver test produces a curdy precipitate which must be a compound of silver. Pure cyanogen will produce the peach blow flame It will combine with other substances.

The above experiments will be read with interest, as they contain important information relative to chemical analysis.

TO CORRESPONDENTS.

"J. O. of N. Y."—The reaction wheel would be the best for your purpose. We have been informed that Mr. Ross's improved reaction wheel is the best in use, but it is difficult for us to tell, as there is wanting a table of experiments to guide us. We have endeavored to get a table but cannot, except for Parker's which is now in our possession. A good plan for manufacturers to pursue would be to advertise for proposals, stating the work to be done, the fall and the amount of water.

"S. H. A. of N. Y."—We have not a draft of Mr. Egan's invention, and we have published in the article you refer to, all that we know of it. A *caveat* we believe has been filed for it, but we do not know of an application for a patent. We shall be happy to receive your description and sketch. When any discovery is made the best thing the inventor can do for himself is to get the leading features of it noticed in our columns. Thus a witness is had for the invention.

"E. A. D. of Madrid."—We shall give you communication due attention.

"L. W. D. of N. Y."—Your letter has just come to hand and we will attend to your request. The Balance is good because simple and correct.

"S. L. of Pa."—We shall get your engraving finished as soon as possible. You perceive the true way to let your invention be known. The benefit you will yet experience. As you have observed, "how can our people, now numbering 20 millions, know about machines

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arless publicly made known to them, and what vehicle like the Scientific American with its well known unexceptionable character and wide circulation."

"H. S. of Mass."—It is the best thing you can do to get an engraving of your machine published in the Scientific American. It will cost you only $6, and the cut will be yours afterwards.

"S. H. of N. J."—The use of the copperplatina pointed rod in connection with the steam boiler has been tried in experiments by Mr. Wall, in England, and with success in obtaining powerful shocks. We do not know that it has ever been applied to prevent explosions.

"H. C. D. of Va."—You can obtain a patent for the discovery of any new improvement, or for a new style of painting. The distinction must be clearly pointed out in the specification.

"J. S. D. of N. H."—The Music Box could not be patented, as numbers of the same description are already known. We have no doubt, however, but it is original with you.

"M. R. of Pa."—The claim of Mr. Adams is not in our possession. It can be got by application at the Patent Office and by payment for the amount of words that is required to transcribe it. His address also can thus be obtained. We should have been happy to have supplied the necessary information free of expense, but cannot at present.

"A. H of Maine."—Applications for patents made last July are only now in the course of examination. This is the fault of Congress not the Patent Office. There have not been enough of Examiners. No more than three months ought to transpire after application before a patent is issued for a new invention, allowing time too, for all necessary corrections.

"L. M. of N. Y."—The inventor ought distinctly to understand his own business. If he does not, who is to blame? He surely cannot expect another to do his business and assume his responsibility—this would not be honest nor just.

"A. H. of N. Y."—We regret exceedingly that we cannot furnish you with those odd numbers which you seem so much to desire, as we have not a single one of them.

"D. S. M. of N. H."—The kind of pumps you speak of have been long known and cannot now be covered with a patent. Mr. Fulton, of Baltimore, has lately applied it to boats but with what success we cannot tell.

"B. F. G. of N. Y."—Your letter with the two drawings, &c. have been received.

"E. L. of Va."—The answer was to Mr. Nevins of this State.

"J. H. A. of Mobile."—We sent to you a copy of vol. 2, bound, and all the numbers of the present volume by the bark Pilgrim, which sailed from this port March 23d.

"R. & C. of Pa."—We have received the money for a copy of the patent laws and sent one, but if Mr W. has not received it we will send another.—Please inform us.

"E. A. S. of Vt."—We cannot furnish the first Nos. of vol. 2, unless you order a whole volume.

"C. O. R. of Mass."—The information you require will cost you $5.

"J. L. F. of Va."—We have answered you by mail. Also A H. of N. H.; D. of R. I., and D. W. of Vt.

To CORRESPONDENTS.—Be pleased to write plain, brief, and clear. If in some instances an answer has been neglected, our subscribers will be pleased to consider it not intentional, but an overlook which must frequently happen with the best, and more often where the amount of correspondence is so large as ours.

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P. S. I have made arrangements for the manufacturing of D. Barnum's self-acting Safety apparatus for supplying steam boilers with water.
a1 2t* T. J. WELLS.

To Mill Owners.

HAVILAND & TUTTLE'S Patent Centre Vent Pressure Water Wheel.—These wheels are now in successful operation in many towns in Maine, Massachusetts, and Rhode Island, and are found to surpass in power and facility of adaptation any water wheel now in use. This wheel was awarded the silver medal at the Fair of the American Institute recently held in New York and a diploma at the Mechanics' Fair in Boston.

The wheels are manufactured and for sale by the FULTON IRON FOUNDRY CO., South Boston, Mass.,—where the wheels can be seen and any information concerning them had.

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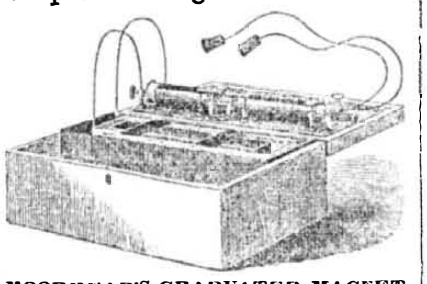


MOORHEAD'S GRADUATED MAGNETIC MACHINES.

IT is now universally admitted by the learned and scientific, that the mysterious power called Galvanism or Magnetism, is in fact the PRINCIPLE OF VITALITY OR LIFE, and that Disease in many of its most painful forms is entirely owing to the absence of this Galvanic or Magnetic power in its healthy proportions If then we can readily supply this wondrous power, when it is thus deficient, we can successfully combat disease; and this has been fully and perfectly attained by the present beautiful and scientific instrument.

Moorhead's Graduated Magnetic Machine is an important improvement over all other forms of manufacture, and has been adopted by the Medical Profession generally, as being the most perfect, convenient and effective Magnetic machine in use. It is exceedingly simple in construction, and therefore not liable to get out of order, as is the case with all other instruments. It admits of the most perfect control, and can be GRADUATED to any power, adapted to the most tender infant, or sufficient for the strongest adult, at the option of the operator. The Magnetic influence is imparted in a continuous manner, and with no unpleasant sensation to the most delicate patient. It requires no assistant in its use, and is in every respect entirely harmless.

Moorhead's Magnetic Machines are used with POSITIVE AND PERMANENT SUCCESS in all cases of Rheumatism, acute or chronic, seated either in the head, joints or limbs; Gout, Tic Doloreux, Nervous and Sick Headache, Paralysis, Palsy, Fits, Epilepsy, Dyspepsia, Palpitation of the Heart, Spinal and Hip Complaints, Stiffness of the Joints, Lumbago, Neuralgia, Nervous Tremors, General Debility, Deficiency of Nervous and Physical Energy, and ALL Nervous Diseases. As a preventive for Apoplexy, the machine is confidently recommended, and in the most confirmed cases of Scrofula, Dropsy, Erisypelas, Deafness, Curvature of the Spine, and all similar complaints, its effects are equally successful.

Each Machine is compactly arranged with the Battery and all necessary appliances, put up in neat rosewood or black walnut boxes. Accompanying each is a new Manual, containing full and simple directions for its use and application in the various diseases in which it is recommended. Any person of ordinary intelligence can successfully use this machine, as everything regarding it is perfectly simple and intelligible.

Every family should possess one of these beautiful instruments. It will always be found a valuable companion, and very often the best physician in time of need.

☞ PARTICULAR NOTICE ☜

The wonderful efficacy and increasing success of the **Magnetic Machines** has induced a desire to place them within the reach of all who may need them; and the proprietor respectfully announces, that in consequence of his late improvements and increased facilities, he has been enabled to place the price for each machine, complete in every respect and WARRANTED at

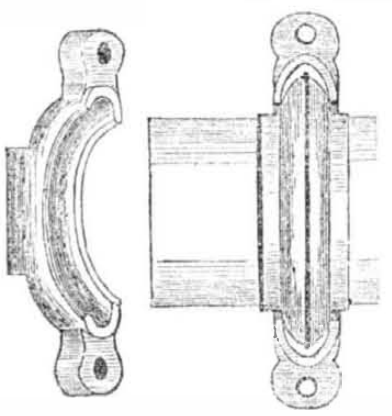
TWELVE DOLLARS.

The Graduated Magnetic Machines are manufactured and sold wholesale and retail, by

D. C. MOORHEAD, 182 Broadway, New York.

☞ **MUNN & CO.** have been appointed Agents for **Moorhead's Magnetic Machines,** and all Orders addressed to MUNN & Co., accompanied with the Cash, will be promptly and carefully fulfilled.

☞ These Machines can be sent with perfect safety to any part of the country. m11 3m



Clasp Coupling Joint.

MESSRS. WEST & THOMPSON would respectfully call the attention of Engineers, Owners, or Agents of Steamboats, proprietors of Factories and others, to their new and improved method of jointing steam and other pipes together, by which means any person is enabled to connect them. For simplicity and perfection they are not equalled, and the price of their Clasp Joints will be found cheaper than the others, as they do not require any flanges, braized or soldered on the pipe, no holes to drill, or grummets to make, nor white or red lead used to make them tight; and their weight is not one half that of the old Flange Joint. They may be seen and obtained at the office of the Patentee, 29 Centre street, near the City Hall, where all orders left will be punctually attended to.

This is to certify that I have examined what is called West & Thompson's Clasp Coupling Joint, for pipes to conduct steam and other fluids, and consider it to be a new and most invaluable improvement.
m25 ROBERT L. STEVENS.

AMERICAN HARDWARE.

THE SUBSCRIBER having been engaged in selling American Hardware on commission for 7 years, solicits consignments from manufacturers, and will refer to those who have employed him the above number of years. SAMUEL C. HILLS,
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WE will pay 10 cents each for 100 copies, No. 16, Vol. 2, Scientific American, delivered at this office, free of expense and in good order.
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Candelabras do do do
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Superior Camphene and Burning Fluid.
November 29, 1847. d18 6m

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THE undersigned have been appointed Agents by the American Gutta Percha Company, and are now in readiness to furnish Bands and Belting of any size or length, at the following

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3 1-2	26	7	57	11	90
3 3-4	28	7 1-2	58	11 1-2	95
4	29	8	63	12	100
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All Bands of extra thickness will be made by special agreement. Light Bands for Cotton Mills furnished at short notice.
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FOR TUBULAR BOILERS,

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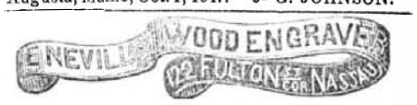
THOMAS PROSSER, Patentee,
d26 28 Platt street, New York

Johnson's Improved Shingle Machine.

THE Subscriber having received Letter Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighth more shingles can be sawed in the same given time than by any other machine now in use.
Augusta, Maine, Oct. 1, 1847. J. G. JOHNSON.



☞ The above is prepared to execute all orders at the shortest notice and on the most reasonable terms.

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THE Subscriber would respectfully inform the public that he is prepared to furnish Engravings on Wood, in every style of the art, upon the most reasonable terms; also designs and drawings of machinery, for specifications, at the shortest notice and with the most undeviating punctuality.

Views of Manufactories and Country Stores engraved on Wood from Daguerreotype plate with correctness.

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THE SUBSCRIBER has removed his Patent Agency from 12 Platt to 189 Water street.

The object of this Agency is to enable Inventors to realize something for their inventions, either by the sale of Patent Goods or Patent Rights.

Charges moderate, and no charge will be made until the inventor realizes something from his invention.

Letters Patent will be secured upon moderate terms. Applications can be made to the undersigned, personally or by letter post paid.
f8 SAMUEL C. HILLS, Patent Agent.

Machinists Tools.

THE Subscriber is now manufacturing a superior article of Large Turning and Screw Cutting Lathes, Drilling Machines, &c. to which he would respectfully call the attention of Machinists and others requiring the above articles. Also, Machinery of every description, manufactured to order, at 42 Gold street, New York. G. B. HARTSON. j1

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For the Scientific American.

On Gilding Paper, Parchment and Leather.

The gilding to be used with water colors may be either with the leaf gold or powder which last when mixed with the proper vehicle, is called shell gold. The leaf gold is necessary in all cases when a shining appearance is wanted and it may be laid upon the designed ground either by ising-glass or gum water. This should be weak and not laid too freely on the ground and a proper time given for the requisite dryness and the management of the gold, the same as described below, and burnished in the same way.—When colors are to be laid on the gilding, it is a good plan to brush it over with the gall of a beast, as they take more kindly afterwards.

When gold powder is used along with paintings in water colors, it is previously formed into *shell gold*. This is made by tempering the gold powder with weak gum water and adding a little soap suds of pure white Castile soap to make it work freely. This gum water is made by dissolving three-fourths of an ounce of gum-arabic and one-fourth of an ounce gum senegal and adding a little white sugar candy, about a quarter of an ounce.—Isinglass water is made by boiling one-half ounce in a pint and a half of water till the isinglass is dissolved when it must be strained through a linen rag and an equal measure of hot water added.

TO GILD BOOKS, OR PAPER.

This is laid on by book binders with the tools using the gold size, and Dutch gold is frequently employed for this purpose.

EMBELLISHMENT OF MANUSCRIPTS

This is done most easily by the *gold ammoniac*. Take *sal ammoniac* and powder it and then dissolve it in water impregnated with a little gum arabic and some juice of garlic.—The sal ammoniac produces a milky appearance from whence in medicine it is called lac ammoniacum. With this prepared draw with a pencil or write with a pen on paper, or vellum, the intended figure or letters of the gilding. Suffer the paper to dry, and then breathe on it till it is moistened and lay on the leaves of gold and press it down with a ball of soft leather. When the paper becomes dry, which will soon be the case, the extra gold can be gently rubbed off with a fine pencil, or linen rag, when the writing will all appear perfectly gold.

On old manuscripts that are highly ornamented letters of gold often rise above the surface and others have a high polish. The one is done by friction with a solid piece of gold, the other by leaf gold. The solid gold method is as follows: take crystal and reduce it to powder and temper it with strong gum water till it be of the thickness of paste, and with this form the letters. When they are dry rub them with a piece of gold of good color as in the manner of polishing, and the letters will appear as if gilt with burnished gold. These embosssed letters are made by means of a stamp in words or letters and when the stamp is to be used each letter must be moistened with oil and as the letters are concave they are filled with the above mixture of crystaline and struck gently on the paper, which must have something soft under it. The letters will then be left in their proper places, and can be rubbed with the gold. Leaf gold cannot be used in the above way, but can be used for embossing in the following manner: take white of eggs and beat them to an oily consistance, then thicken them like paste with vermillion and form the letters with a stamp as before directed, and when they are become dry moisten them and no more, with strong gum water, and when this is the right dryness (clammy) put on the leaf gold and press it to every part of them with soft leather and after this is properly dry it may be polished by an agate burnisher.

Isinglass, alcohol, a little honey, and sugar candy, and a little bole ammoniac well powdered and added together is a good size for gilding the leaves of books: or *sal ammoniac* and sugar candy of equal parts well powdered and white of eggs beaten to an oily consistence is a good cement and fit for use. The paper should be well cut, and polished on the edges, and strongly screwed down by the press and the above cements applied and suffered to dry. It should then be moistened with water and is in a fit state to receive the gold and the leaves may be then laid on, being cut according to the breadth they are to cover and pressed closely down with a cotton ball and after being thoroughly dry it is burnished with an agate burnisher.

GILDING LEATHER.

In bookbinding the operator lays on the leaf and presses the figures in by steel stamps made hot, when the redundant gold may be afterwards brushed off. When skins are to be gilded the firmest and softest only are chosen and after being tanned are softened for some hours in water frequently stirred, and then taken out held by one corner and beaten against a flat stone, like flailing, afterwards they are spread on the stone and rubbed over with an iron instrument resembling a blade, holes are patched up by pieces glued with glover's size, and then the whole is sized over with very strong glover's size, stiff like jelly. The side on which the hair grew is that used for the size or silvering and the size is spread or rubbed with the hand quickly and carefully twice over with a short interval between the coats. The leaves of silver are then laid on, and this requires great art and the whole skin must be covered with leaf after leaf, like shingling, when the leaves are then pressed down by a ball of fox tail. The skins when they are thus silvered are hung to dry on cords held by clothes pins and left to dry. They must be kept free from dirt; when dry they are fit to be burnished.

For the Scientific American

Alloys of Metals.

Gold is the most ductile metal for wire, with the exception of platina, of which wires are made finer than a spider's thread Zinc draws better than either tin or lead. The following alloys for engineering purposes are now extensively used in the arts.

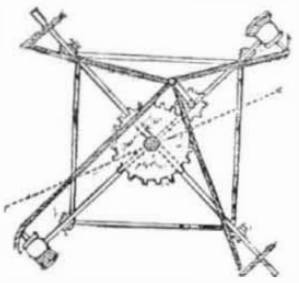
To one pound of copper previously melted as described in our last article, add one and a half ounces tin and half an ounce of zinc — This is a very strong and tenacious alloy. For wheels add one and a quarter ounces of tin and two ounces of brass For articles requiring turning add 2 ounces tin and 1 1-2 ounces brass. For bearings, nuts, &c. add 2 1-4 ounces tin and 1 1-2 ounces brass. A composition for general purposes, used by an engineer of eminence, add 1 7-8 ounces tin and 1 7-8 ounces zinc.—For bearings to resist great strains, add 2 1-2 ounces tin and 1-2 an ounce of zinc For an extremely hard metal, almost too hard for the file, add 2 1-2 ounces tin and 2 1-2 ounces zinc. For hard white button metal, add 1 ounce of tin and 2 ounces zinc. For common metal for ditto, add 1-2 an ounce tin and 1 1-2 ounces zinc. 10 lbs. tin, 6 lbs. copper, 4 lbs. brass, constitute white solder.

To Make Sweet Almond Oil.

Select those almonds which are sound fresh and not worm-eaten, rejecting all such as are rancid, and after the careful separation of all foreign matters, introduce them into a bag, and shake up well and frequently, to detach the fine yellow dust adhering to the cuticle. This done, they are taken out, sifted to remove this dust and reduced to a paste in a mill. With this paste you fill up canvas squares or bags, and submit them to a gradual, but strong pressure between slightly heated plates, for experience proves, that if they or too hot the oil is liable to rancidity. The oil thus obtained, must be filtered and carefully preserved from contact with air, for on the filter is deposited a part of its mucilage. Fontinelle is said to have obtained it free from mucilage, and capable of being preserved for a longer time, by the use of three or four times its weight of water, holding in solution one twenty-fifth of white table salt. The oil of sweet almonds, well prepared from fruit which is not bitter, is of a bright yellow color, and has a slight and mild odor of the almonds, becomes easily rancid, and thickens. To obtain a handsomer and whiter product, first scald the almonds and stir them about until their peels are detached, then drain them in a basket, douse them with cold water, pick out the skins, dry the almonds and proceed with them as before directed.

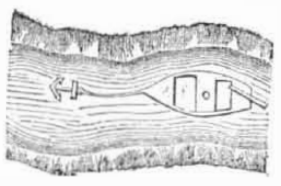
MECHANICAL MOVEMENTS.

Rotary Gymnastic Wheel.



The above is an apparatus contrived for amusement by Marcel Cardinet, an ingenious Frenchman. The people to be amused seated themselves at the extremity of each arm, and by pulling the ropes connected with the crank of the small wheel produced to themselves a rotary motion round the large wheel. The whole framing of the arms was supported on an axis below. And the principle is the very same as that displayed in the old rotary turnpike bars.

Action of a Stream.



This a method of passing a boat from one shore to another and is in common use in many countries. On the Rhine in Germany and on some of our North-eastern rivers, we believe the same system is practised. The effect of the stream upon the rudder placed at a certain angle with the prow of the boat carries the boat across the stream. In the centre of the stream is an anchor, whereby the boat is held from being carried away down stream.

To Make Good Cheese.

The Stilton cheese is made by putting the night's cream without any portion of the skimmed milk, to the milk of the following morning; but those who wish to make it very fine add a still greater quantity of cream, and of course the richness of the Cheese depends on the amount which is used.—Butter is also said to be sometimes mixed with it. The rennet is then added without any coloring; and when the curd has come, it is taken out without being broken, and put whole into a sieve or drainer, where it is pressed with weights until completely cleared of whey; when dry, it is put with a clean cloth, into a hooped chessant (or mould) and placed under the press, the outer coat being first salted; when sufficiently firm to be removed from this mould the cheese is placed upon a dry board, and tightly bound in a cloth, which is changed daily, in order to avoid all danger of cracks in the skin, until this is found to be tolerably well crusted; after which it is no longer used, and the cheese requires no other care than being frequently turned upside down, and occasionally brushed.

Human Hair.

Among the different kinds of human hair, only that which is straight approximates to the cylindrical form, while the varieties which are curly are more or less flattened the compression being apparently in proportion to the curlings. Even in the straightest Caucasian hair there is a slight deviation from roundness, and in some instances at least, a little longitudinal groove is perceptible. The crisp hair of the negro has this groove deeper and presents a transverse section of the form of a bean. It was suggested that the curl or twist of the negro hair may be connected with a greater tension of the fibres along the groove, for each hair is an assemblage of innumerable minute parallel fibres, The hair of the Bushman who was recently in this city, is much more minutely curled and closely matted together than the negro hair; and when seen by the aid of a microscope appears quite flat or ribbon shaped, four or five times broader than it is thick. It shows no groove but very delicate parallel striæ of fibres,

These differences have much interest in their bearing upon the question of the unity of origin of the different races of man. Have these races all sprung from a common parentage, or are they as some naturalists contend derived from distinct sources, and only in that degree of relationship to each other which subsists between closely allied species among inferior animals? It is well known that the hair of the mammalia is analagous to or represents the feathers of birds and the scales of fishes. Differences in the form, structure and distribution of the feathers are among the indications which separate the species of birds, and Prof. Agassiz has classified fish by the difference in the scales. Yet there is an indubitable test of the oneness of the human family.

Amusements of Chloroform.

A practice has assumed the form of a mania in Edinburg, Scotland, certainly not less exciting than the railway mania. It consists in converting fashionable evening parties into a species of pharmaceutical association for experimenting on the effects of chloroform, and other substances of similar properties. One of these exhibitions is worthy of notice. A number of ladies and gentlemen were invited to an evening party in the house of a respectable medical practitioner. At ten, instead of music and dancing, the learned doctor entered with flask and sponge, and every guest was treated to a trip to the realms of insensibility. Some of the ladies were foolish enough, while there, to utter such speeches as, "Oh! my beloved Charles, come to my arms," at the same unwittingly extending them to receive the dear creature. Some of the gentlemen, not having taken the precaution to swallow a sedlitz on a carminative previous to their first appearance, committed slight breaches of etiquette not very amiable.

Danger of Sleeping near Burning Lime Kilns.

During the process of lime burning, carbonate of lime is decomposed by means of heat, and carbonic acid driven off. Hence the fatal effects which have resulted from persons incautiously lying down to sleep near burning kilns.

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